Microstamping: A Law Enforcement Tool To Combat Illegal Firearm Trafficking

Mr. Todd Lizotte, Co-inventor of Firearm Microstamping Technology
Written Statement to the Joint Committee on Judiciary, March 16th, 2009

To the members of the Joint Committee on Judiciary, thank you for allowing me to speak on the subject of firearm microstamping.

Crime scene investigation involving a firearm is aided by rapid firearm identification. Firearms are rarely recovered from crimes scenes; on the other hand fired cartridge casings are almost always recovered. With present technology, however, there is almost no way of identifying firearm trafficking sources, without a recovered firearm.

Again let me state; unless a firearm is recovered, there is no way of identifying the firearm trafficking source.

The faster the source is determined the easier it is for law enforcement to consider methods of identifying; rogue firearm dealers, straw purchasers or setting up sting operations to catch the purchaser and possibly the network they use to traffic the firearms once purchased. The more data you have the greater the chance of finding the source.

This technology we all generically call Firearm Microstamping, when applied to newly manufactured semiautomatic handguns will provide near immediate opportunities for tracing illegal firearms for law enforcement in the United States. Microstamping is a physical evidence technology and trace solution where intentional tooling marks are formed onto interior mechanisms of the firearm that impact the surfaces of cartridge casings.

I should emphasize the word intentional. Currently law enforcement uses the unintentional tooling marks formed by burrs left on the interior surfaces of the firearm; the unintentional marks are neither optimized to the dynamics of the firearm nor purposefully made unique. However, law enforcement relies on these unintentional marks as the basis of the forensic technique known as firearm and tool mark identification to match cartridge evidence to cartridges fired from a recovered firearm. If the firearm is not recovered; the technique produces no helpful result.

Firearm Microstamping however is an intentional tool mark; optimized to the firearms mechanical dynamics, unique and extractable. Extractable is the key, you don't need to create an opinion or to interpret, you simply extract the code.

The intentional tooling marks take the form of alphanumeric and encoded geometric codes, simpler to a barcode. As the firearm is discharged the intentional tooling marks transfer a code to the cartridge casing before it is ejected out of the firearm.

Firearm Microstamping technology is a passive mechanical technology that leverages the existing forensic laboratory infrastructure requiring no new databases or investment in technology at the laboratory level.

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Again let me clearly state; there is absolutely no need for a national database, or even a local database. All of these codes will reside at the manufacturer's site, to ensure that tracking is just a simple accounting activity on the manufacturing floor, which is already a task the manufacturers certify to meet the BATFE requirements for tracing.

What is Firearm Microstamping? Simply stated, Firearm microstamping is an evolution of traditional firearm tool mark examination; it strengthens the existing method of firearm and tool mark examination, by providing an evolutionary step that can actually be quantitatively analyzed or in laymen terms capable of being measured.

Firearm Microstamping will result in a forensic method for firearm tracing akin to the robustness resulting from forensic methods for DNA analysis; Firearm Microstamping will provide consistent and with a high degree of certainty, the connection between firearm evidence, e.g. fired cartridge at the crime scene, and a specific firearm source.

In this post 911 age, there is a need for intelligence led policing efforts. Forensic Intelligence techniques such as Firearm Microstamping need to be implemented to provide an edge to law enforcement who will need to combat illegal firearm trafficking.

You just need to look to our border with Mexico for examples of how the tide of crime is heading our way. What was once commonplace violence at a distance in Columbia has reached upwards towards the United States to Mexico and across to Texas.

We developed this technology to target firearm trafficking, to support law enforcement by providing real time forensic intelligence to target criminal trafficking, straw purchasers and criminal enterprises.

In closing I would just like to state the following:

We reiterate, as stated nearly two years ago, we will extend to the industry a royalty free license as outlined in our press release dated June 15th, 2007.

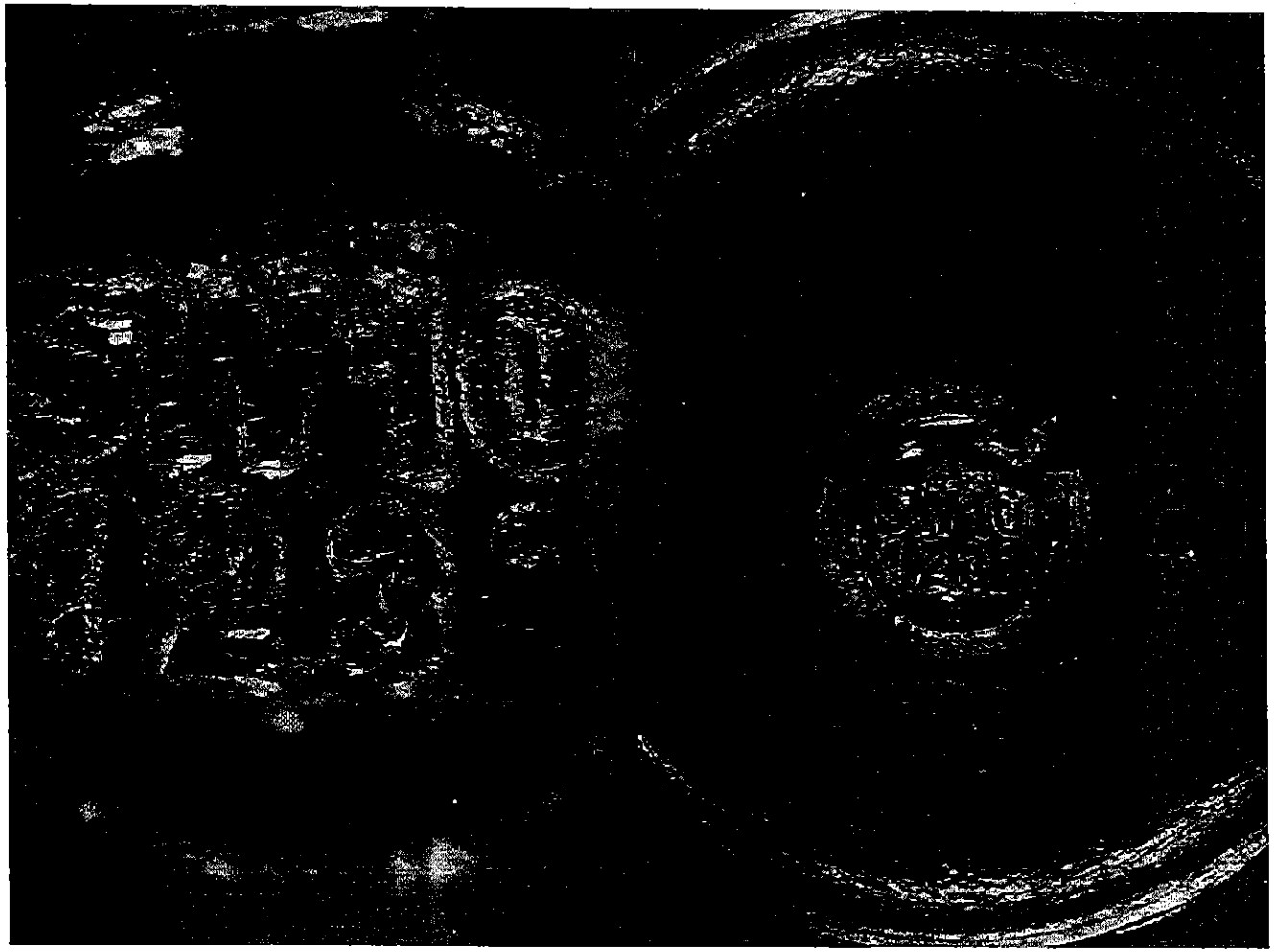
We will extend to the firearms industry at their invitation, but at our expense, the opportunity to have us travel to their facility to go over the technology and to show them how the technology can be implemented into their facilities.

We furthermore extend to the NRA and NSSF, at their invitation, but at our expense, the opportunity to have us travel to their facilities to go over the technology and its benefit to law enforcement and to demonstrate why there is no need for any type of national database or even firearm registration to make this work.

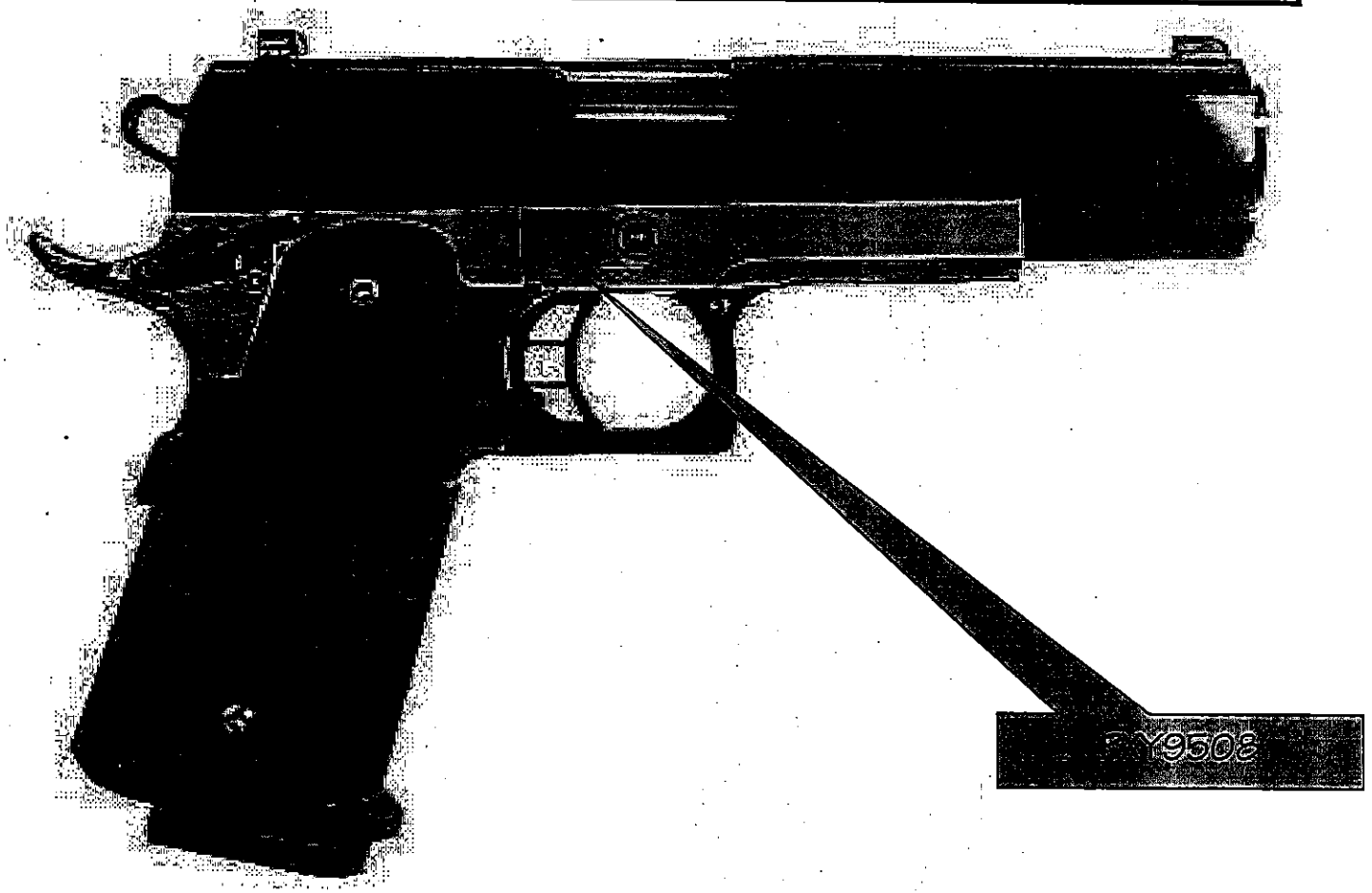
Thank you for your time.

Todd Lizotte
Co-inventor of Firearm Microstamping

Microstamping: *Developing Better Trace Data Through New Technology*



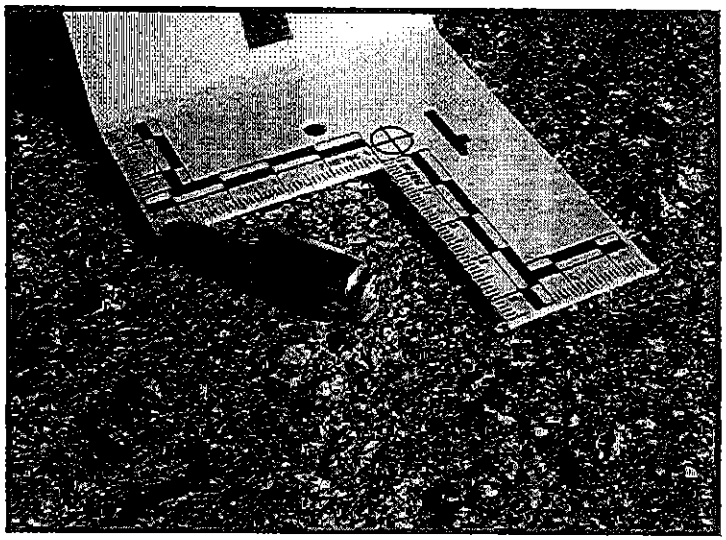
Importance of Current Trace Data



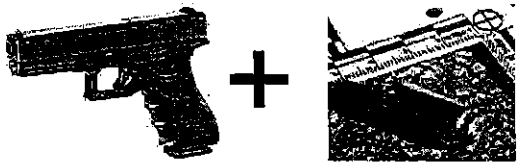
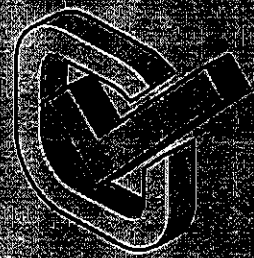
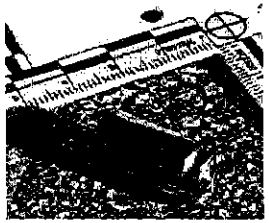
"The accurate identification and tracing of recovered firearms is one of the most important steps in a criminal gun investigation."
International Association of Chiefs of Police

Most Guns Used in ***Violent Crime*** are not Recovered

- Criminals don't regularly abandon their guns at a crime scene
- Much more common to recover expended cartridges
- Microstamping provides the missing link between the cartridge case and the tracing system

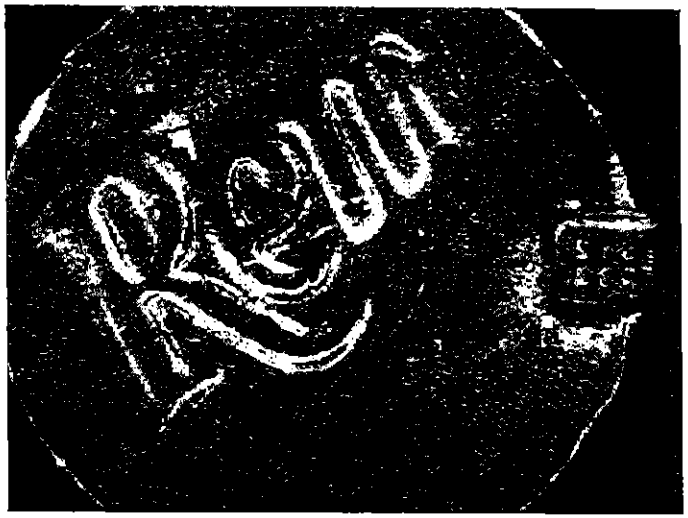


How to find a serial number from a "Recovered Cartridge"

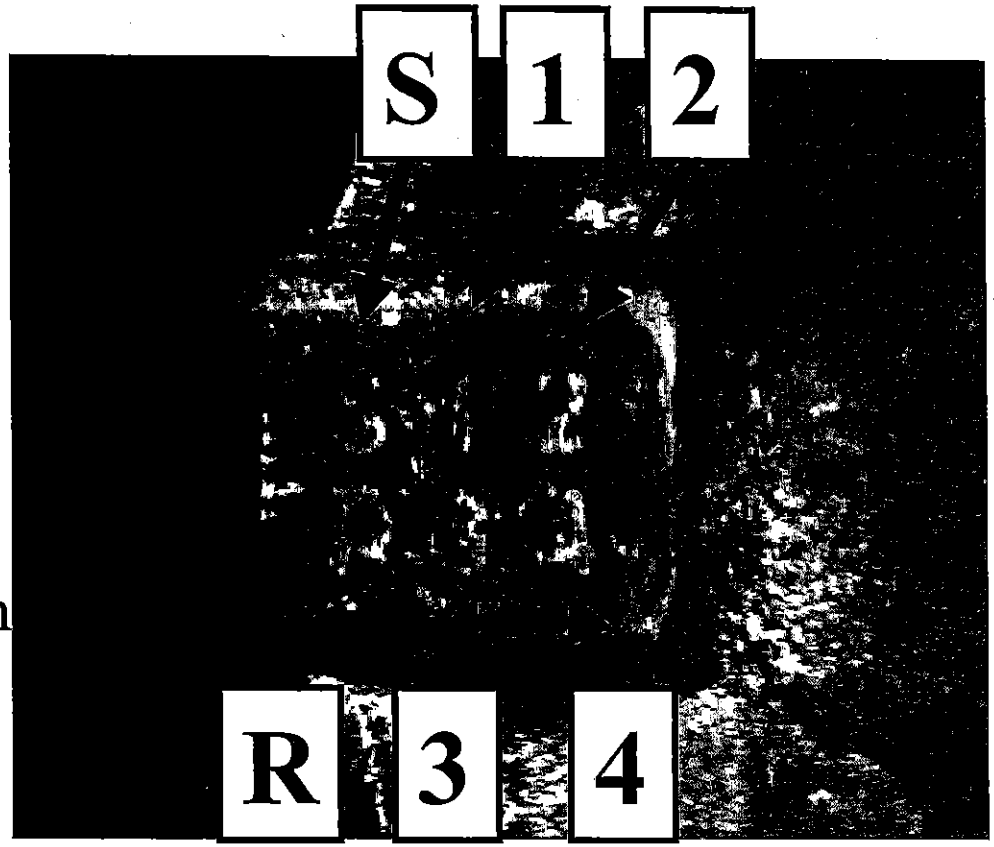
Recovered Evidence	Firearm ID Technology (Capability) Benchmark		
	Traditional Comparison By Hand	Imaging (NIBIN or RBID)	*Microstamping*
 **Recovered Firearm & Cartridge**			
 **Recovered Cartridge / No Firearm**		**≤ 1.5%***	**≥ 80%**

*** Estimate based on ATF published Data 1.2 Million images in NIBIN versus ~20,000 Hits**

Benchmarking Firearm Identification Technologies



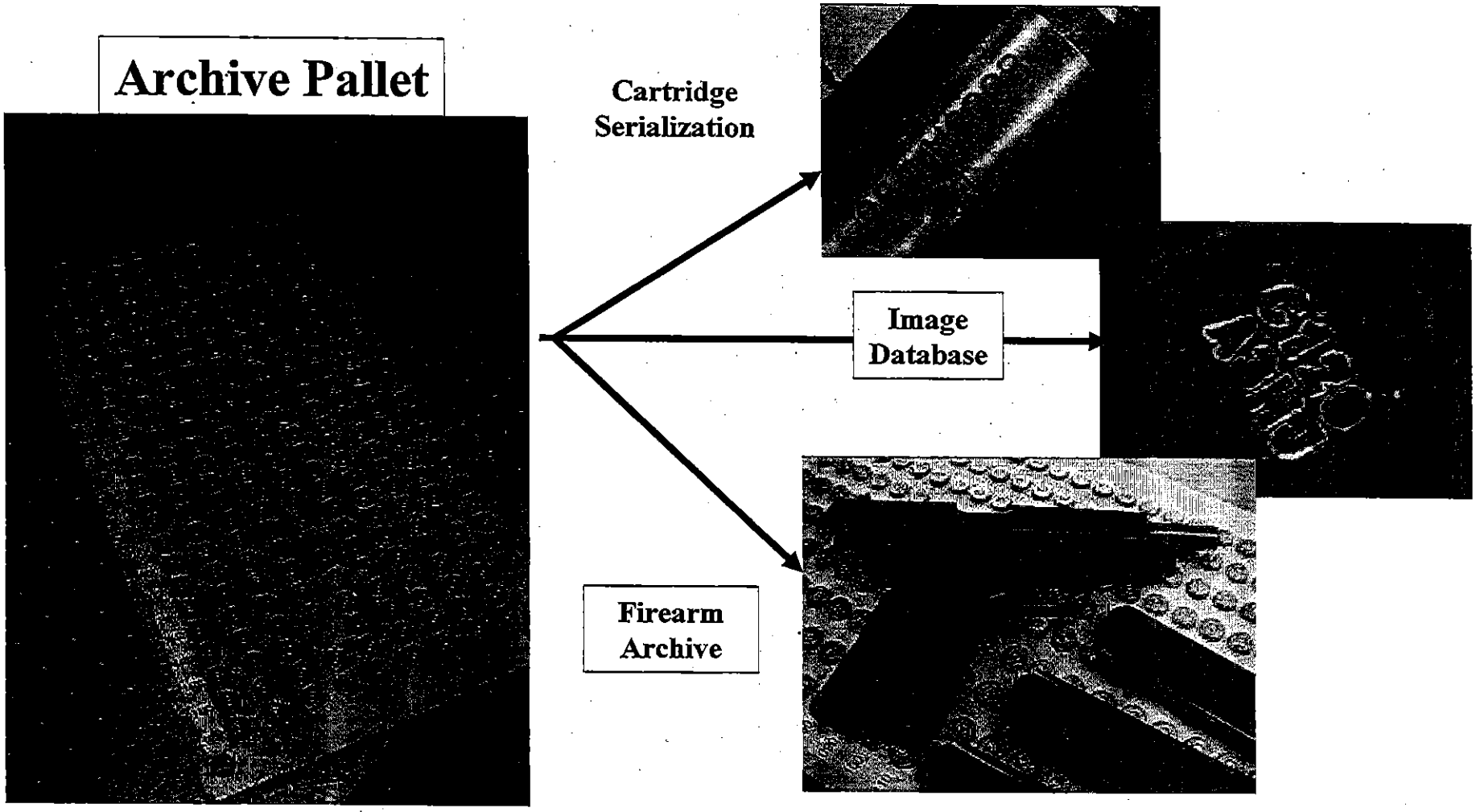
Optimized Ruger Mark III – 22 LR Rim Fire Cartridge (#128) "Single Hit"



* Cross Polarized Ring Illumin
* Flipped Image For Clarity

Todd Lizotte – Pivotal Development
Microstamping Technology Transfer Center

TEST DATA (Archive)



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Optical Imaging Only / Manual De-Code / No Automation

Archive TEST DATA

1991 A1 .45 ACP Colt (1911) 1500 Rounds

[redacted] / Magazine)

**** (Lizotte-Ohar Technique) ~99.2% Code Extraction (Pos #1 & Pos #2 / Magazine)**

***** (Absolute Certainty Technique) ~98% Code Extraction (Pos #1 & Pos #2 / Magazine)**

* Scenario #1, only one cartridge casing found at crime scene (Lizotte-Ohar Method) Simulating a single shot fired scenario

** Scenario #2, two cartridge casings found at crime scene (Lizotte-Ohar Method) Simulating two shots fired scenario

*** Scenario #3, two cartridge casings found at crime scene (Absolute Certainty Method) which means each number of the code or encoded code element, has to be visually identifiable, beyond a reasonable doubt. Even a higher level of scrutiny only reduced the extraction by 1%.

The more cartridges found at the crime scene the higher the code extraction!!!

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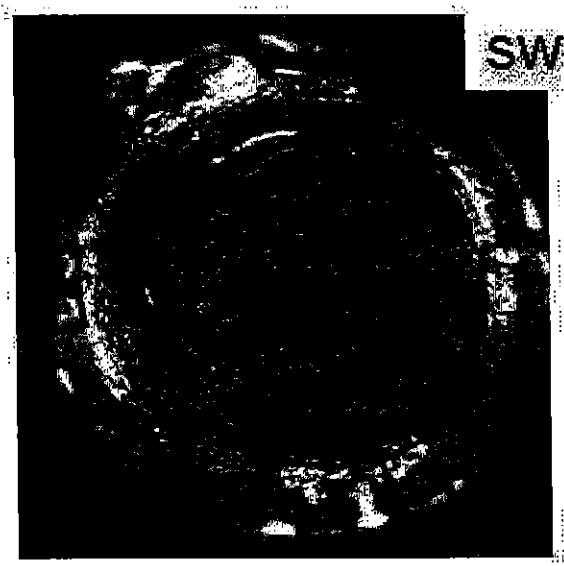
Multiple Hit Cartridges Easily Readable with SEM Microscopy Also Easily Extractable When Using Heuristic Approach



Optical microscopy stereo with polarization

SEM microscopy

SEM backscatter microscopy

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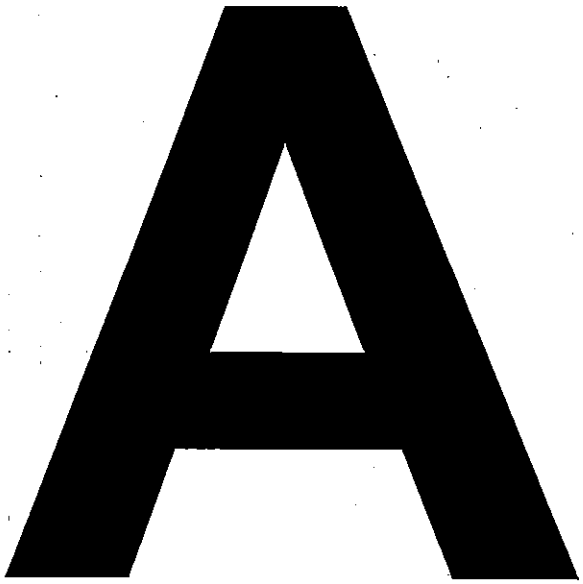
Microstamping: Heuristic Algorithm Code Extraction Method



What is this?

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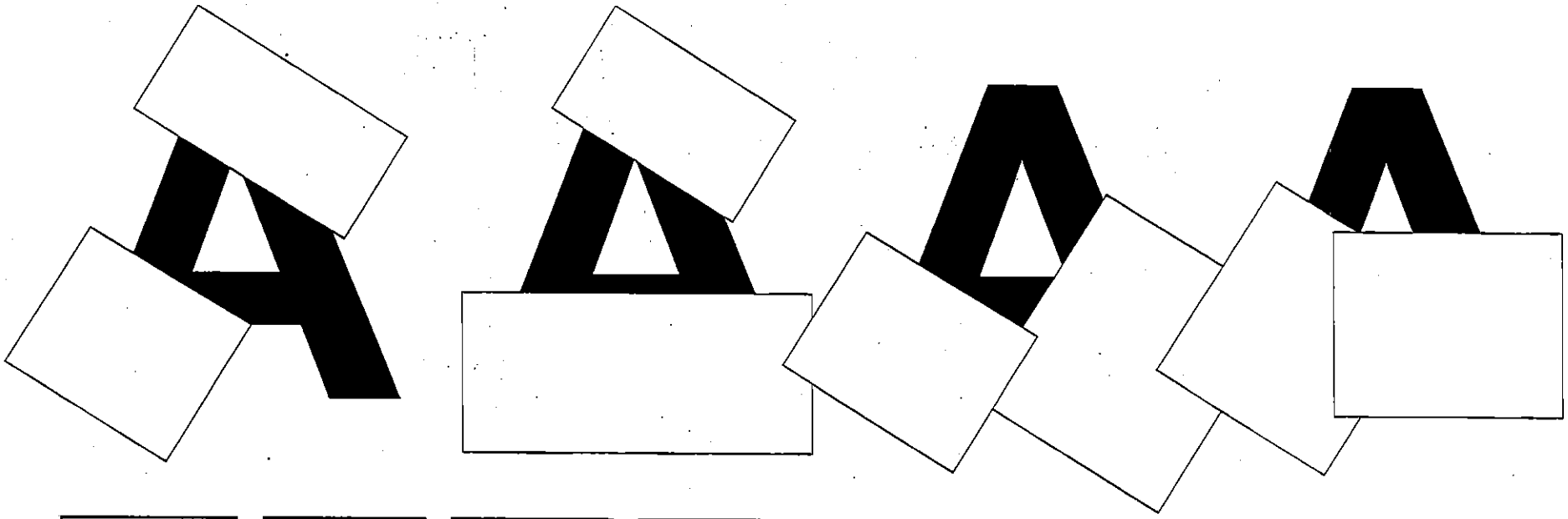
Microstamping: Heuristic Algorithm Code Extraction Method

What letter is this?



A B H J K 4 R V

Microstamping: Heuristic Algorithm Code Extraction Method

Optimized to Firearm, Fixed Font, and Standardized Placement
"Yields High Degree of Extraction Capability"